

BK800L-3 Flipover Unit User's Guide

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1.1 Description

The Buskro BK800L-3 Flipover unit was designed to convert stacker-type inserters into continuous in-line operation capable of postage metering and/or sorting. Due to the DC motor control, encoder transport speed monitoring and product registration, the unit is compatible with all applications requiring Compose IQ tracking capabilities, like Master-Slave and OCR applications, or any time both sides of the product must be addressed. The unit's sturdy construction provides a trouble-free, no maintenance operation for many hours of use.

1.2 Safety Considerations

The BK800L-3 Flipover unit was designed to operate safely. However, like most industrial equipment, this equipment can present worker safety problems if care is not taken to operate it correctly. A micro-switch detects when the top safety cover is removed stopping the unit and not allowing it to restart unless the cover is in place. All trip points are inside the unit, where the operator normally does not have access. However, by removing the side covers, the drive and transport belts can be exposed presenting a great risk for personal injury. As a general rule, do not operate the unit without the safety covers in place.

1.3 BK800L-3 Features

1.3.1 High speed transport

The unit can keep up with most of today's transport systems located upstream, like inserters or inkjet bases. The speed can be accurately controlled to be slightly higher than the speed of the upstream system for efficient product transfer thus improving product flow and ultimately overall productivity by avoiding product jams. The maximum belt speed was pressed at the factory but can be increased by adjusting the potentiometer on the DC control board.

1.3.2 Buskro inkjet base compatibility

The BK800L-3 unit is fully compatible with standard Buskro inkjet bases. Connection to inkjet bases located upstream or downstream the flipover is made through a universal upstream-downstream cable that can be attached to the upstream (37pin) /downstream (57pin) connectors located on the left cover. The unit can be stopped and started from upstream/downstream, preventing in-feed jams and when the unit's emergency STOP button is pressed both upstream and downstream equipment will stop. The universal interconnect cable, Buskro part number BK-CAB-UNI (former 9102083A) is not supplied with the unit and has to be ordered separately.

1.3.3 Construction and maintenance

All mechanical and electrical system components in the BK800L-3 Flipover have been designed for long-lasting and extensive use. The solid aluminum frame construction with ball bearing mounted shafts and the long lasting belts are just some of the features that add durability to the product. The gear drive mechanism was replaced with a belt driven one that makes the unit quieter, for operator convenience. In order to provide the necessary height adjustment to align the unit with the upstream unit, height-adjustable feet were added to the flipover stand.

1.4 BK800L-3 Flipover Specifications

Table 1-1: *BK800L-3 Flipover Specifications*

Product handling		
Minimum	3.0" x 5.0"	76 mm x 127 mm
Maximum	9" x 12.0"	229 mm x 305 mm
Thickness	Single Sheet to 3/8"	Up to 9.5 mm
Physical		
Overall Length	42.79"	1086 mm
Overall Height	39.20" to 43.00"	980 to 1092 mm
Overall Width	22.30"	566 mm
Belt Height	33.57 to 37.37	852 to 949 mm
Leveling Foot Length	3.80"	96.5 mm
Weight (Crated)	100 lb	45 kg
Production Rate		
Belt Speed	28 to 600 ft/min	0.14 to 3.00 m/s
Electrical Requirements		
Line Voltage	120 VAC	
Line Current	5 A	
Power	0.77 VA	
Motor	1/3 Hp, 90 VDC	
DC Controller	90 VDC	1/3 H.P. DC controller
Interface Specifications		
J1 Downstream 57 pin	Universal Upstream - Downstream Cable, Buskro Part Number BK-CAB-UNI	
J2 Upstream 37 pin	Universal Upstream - Downstream Cable, Buskro Part Number BK-CAB-UNI	

1.5 System Drawings

Figure 1-1: *BK800L-3 Flipover Components*

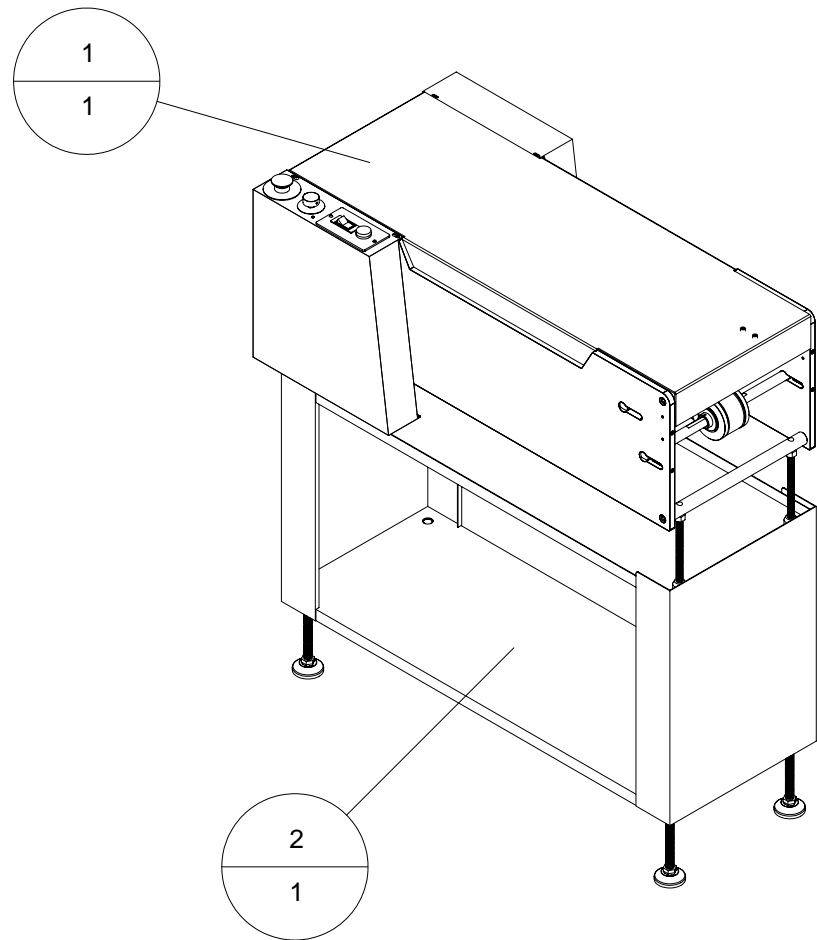


Table 1-2: *BK800L-3 Flipover Components*

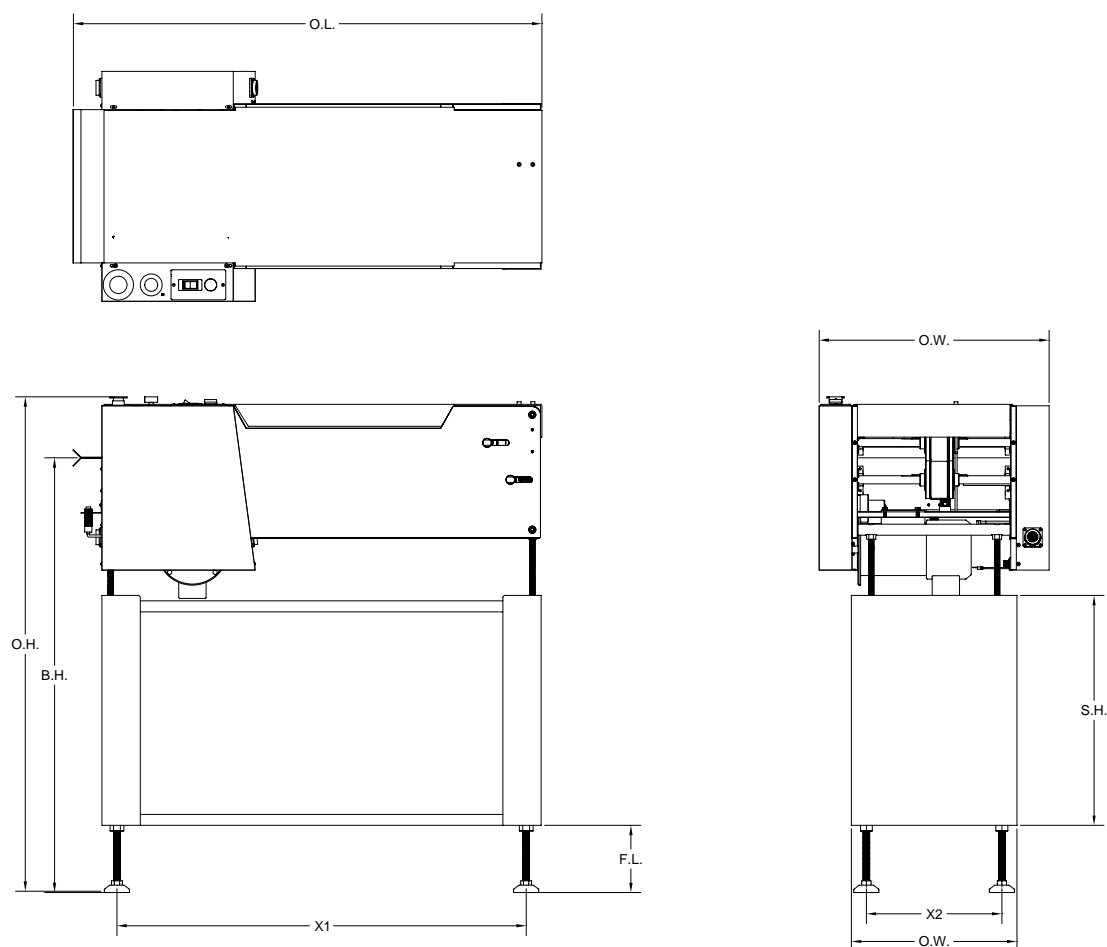
Item	Description	Reference
1	Flipover Unit Assembly, BK800L-3	
2	Flipover Stand Assembly, 9103006A	

1.5.1 Flipover dimensions

Table 1-3: *BK800L-3 Flipover Dimensions*

Symbol	Description	Dimensions	
O.W.	Overall Width	21.00"	594 mm.
O.L.	Overall Length	42.79"	1086 mm.
O.H.	Overall Height	39.20" to 43.00"	980 to 1092 mm.
B.H.	Belt Height	33.57 to 37.37	852 to 949 mm.
F.L.	Leveling Foot Length	3.80"	96.5 mm.
X1	Feet Distance	36.88"	936 mm.
X2	Feet Width	11.88"	301 mm.
F.H.	Flipover Height	18.76"	476 mm.
S.H.	Stand Height	21.00"	533 mm.
S.W.	Stand Width	15.12"	386 mm.

Figure 1-2: *BK800L-3 Flipover Dimensions*

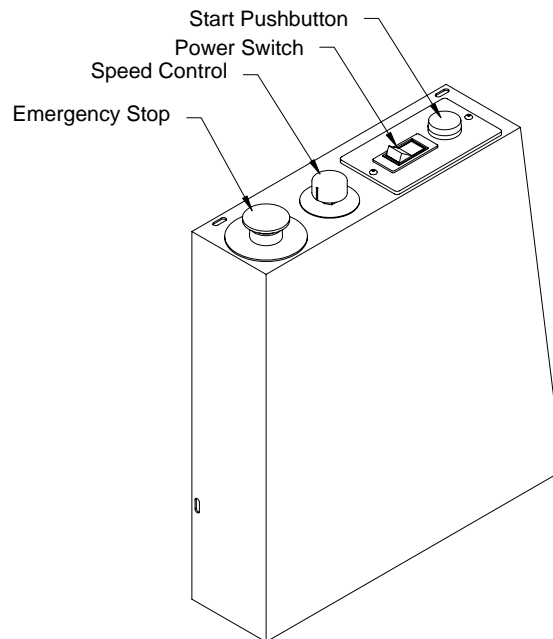


2.1 Control Functions

The BK800L-3 Flipover is equipped with a side cover located on the right side of the flipover unit. Attached to the cover, are all the controls required to operate the unit. The controls can be identified in *Figure 2-1* below and their function is described at 2.1.1-2.14.

- **Main Power Switch**
- **Machine START Pushbutton**
- **Speed Control Knob**
- **Emergency STOP Button**

Figure 2-1: BK800L-3 Controls



2.1.1 Main power rocker switch

The main power rocker switch provides power to the unit, illuminating when switched ON. It is equipped with resettable circuit breaker rated 5 Amps, to protect against any overload conditions.

2.1.2 START Pushbutton

The START pushbutton, located on the front panel beside the main ON/OFF switch allows the user to select start the unit. When downstream and/or upstream functions are selected from the DIP switches on the interface board, an upstream/downstream signal is generated in order to start the Buskro system located upstream/downstream.

2.1.3 Emergency STOP

The red emergency stop button is the leftmost button on the right side cover. When the button is pressed, the flipover unit stops immediately and the base control board generates upstream/downstream stop signals to stop any unit electrically interlocked to the flipover. The upstream/downstream functions must be selected from the interface board DIP - switches in order for the upstream/downstream signal to be generated. When the emergency stop button is pressed, it will immediately lock in place. As a result, it must be turned counterclockwise in order to unlock before the unit can be started again.

2.1.4 Speed control knob

The production speed regulation dial, or speed control knob, is the knob located to the right of the emergency STOP pushbutton. This dial permits machine speed adjustment in the speed range from zero to a linear belt speed of 600 ft/min (3.05 m/s). A clockwise rotation of the speed dial corresponds to a speed increase. Conversely, a counterclockwise rotation results in a speed decrease.

2.2 Upstream / Downstream Installation Instructions

The upstream/downstream installation instructions comprise all the information necessary to properly integrate the BK800L-3 Flipover unit with upstream/downstream equipment such as inkjet or inserter systems. Essentially there are two steps to successful installation. They are proper alignment of the base with the upstream and downstream equipment for smooth product flow, and integration of the electrical system to coordinate the control of all equipment embodied in the system. Note that the proper interconnect cable must be used, Buskro part number BK-CAB-UNI.

2.2.1 Physical alignment of upstream/downstream equipment

These instructions describe the physical alignment of the flipover unit with upstream or downstream equipment:

1. Place the BK800L-3 next to the upstream/downstream equipment. Try to align the centers of the systems together and move the systems as close as possible to each other (approximately 1/4" or 5 mm from the infeed or outfeed rollers).
2. Raise the flipover system by individually turning each of the four height adjustment legs attached to the flipover stand in a clockwise manner using an adjustable wrench. Ensure that the system is level and that the product is level with the flipover belt. Tighten the locking nuts on the legs when the system is correctly aligned.

2.2.2 Electrical connection to upstream/downstream equipment

In order to electrically connect upstream/downstream equipment to the BK800L-3, the universal interconnect cable, Buskro P/N BK-CAB-UNI is required.

2.2.2.1 *Connecting the Upstream Unit to BK800L-3*

The universal cable must be plugged into the 37 pin upstream receptacle on the BK800L-3 Flipover located on the left cover. The Upstream DIP switch on the Base Control Board must be set to ON, see 2.3 – Configuring the Buskro 9102380A Base Control Board, below. The downstream function on the base interface board of the upstream inkjet unit must be also enabled.

2.2.2.2 Connecting the Downstream Unit to BK800L-3

The universal cable must be plugged into the 57 pin downstream receptacle on the BK800L-3 Flipover located on the left cover. The Downstream DIP switch on the Base Control Board must be set to ON, see 2.3 – Configuring the Buskro 9102380A Base Control Board, below. The upstream function on the base interface board of the Downstream unit must be enabled.

2.3 Configuring the Buskro 9102380A Base Control Board.

The 9102380A Base Control Board was designed as a universal control board for all Buskro machines. Therefore it has a number of features which may or may not be used in all machines and/or configurations.

The DIP configuration switches allow the unit to eliminate the need for Stop inputs in those machines and/or configurations where they may not be used.

For the BK800 Flip-over Unit, the only external Stop signals which would be of interest are the inputs from machines placed upstream and/or downstream from the unit.

The following settings should be used:

Switch	Setting
1 (CONV)	ON (DIS)
2 (UPSTR)	OFF (EN) if an upstream machine is connected, ON (DIS) if no upstream connection exists.
3 (DNSTR)	OFF (EN) if a downstream machine is connected, ON (DIS) if no downstream connection exists.
4 (JAM)	ON (DIS)
5 (CONTR)	ON (DIS)
6 (RUN)	ON (DIS)

The standard Buskro practice is to provide a closed contact for “Run” and an open contact for “Stop”. The DIP switches provide this signal if it is not supplied by an external unit. Thus, closing the switch means that the external signal is ignored, while opening it enables the board to react to external inputs.

A red “STOP INPUT” light on the board means that it is receiving a STOP input. The machine cannot start and it will not send a START signal to other equipment as long as it sees a STOP input.

Note that all control signals used in the unit are at a 12 VDC level, looking for a dry contact (STOP and START **from** other machines), while the unit provides dry contacts for those signals coming from other machines (STOP and START **to** other machines).

2.4 Product Setup Instructions

The product setup instructions encompass all those instructions necessary to ensure smooth product flow between the upstream inkjet and the BK800L-3.

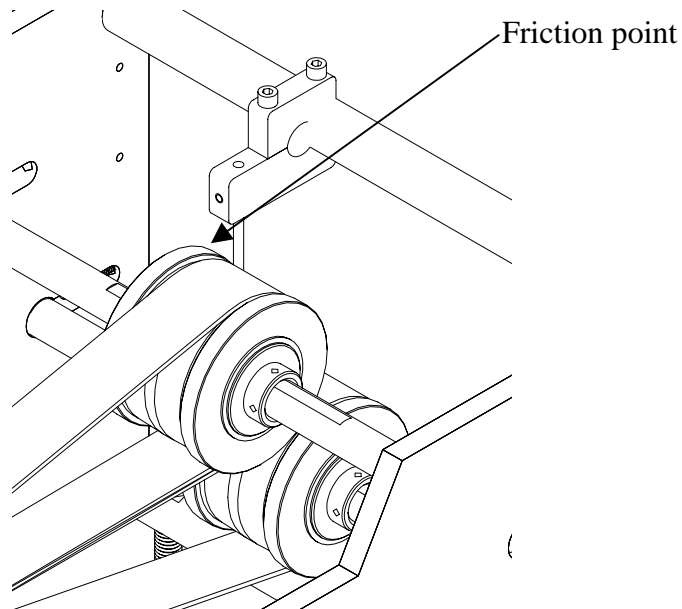
2.4.1 Adjusting the flipover speed for smooth product transfer

In order to prevent product jamming at the entry of the BK800L-3 transport, it is important that the flipover speed be slightly faster than the upstream inkjet. As a result, set the BK800L-3 transport flipover so that it is slightly faster than the transport speed of the upstream equipment.

2.5 Tensioning the Flipover Belts

The belts must be properly tensioned in order to ensure proper product flow as well as normal belt wear. When improperly tensioned, the belts can rub against the roller shoulders, significantly increasing the wear. See *Figure 2-2* below. The belt tension it is extremely important and can be easily achieved following the instructions at pt 2.4.1 below.

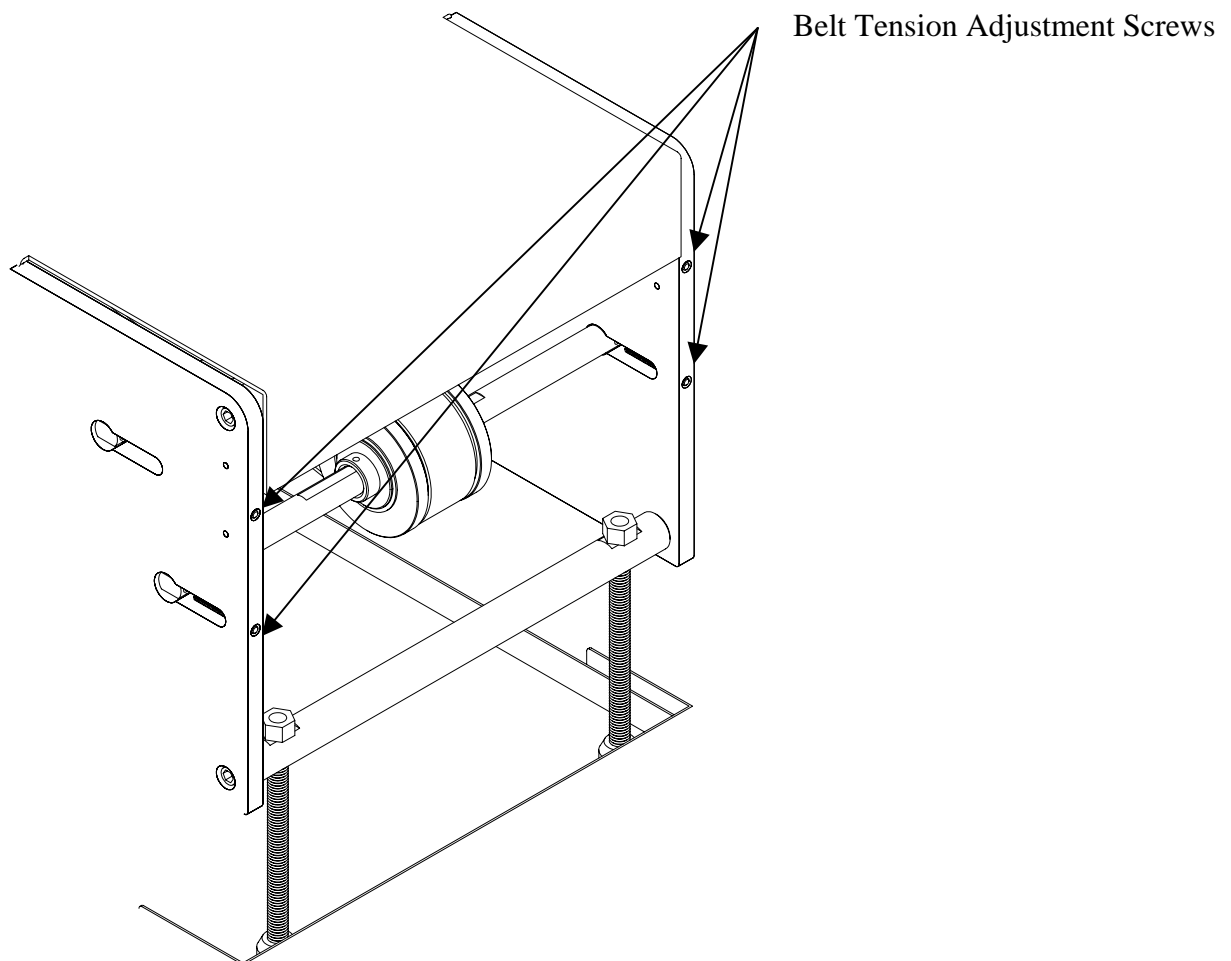
Figure 2-2: BK800L-3 Belt Wear Point



2.5.1 Belt Tensioning Procedure

1. Locate the four tensioning set screws, SHSS, 1/4 –20 UNC x 2” on the out feed side of the unit, mounted in the aluminum sideframes. See *Figure 2-3* below.

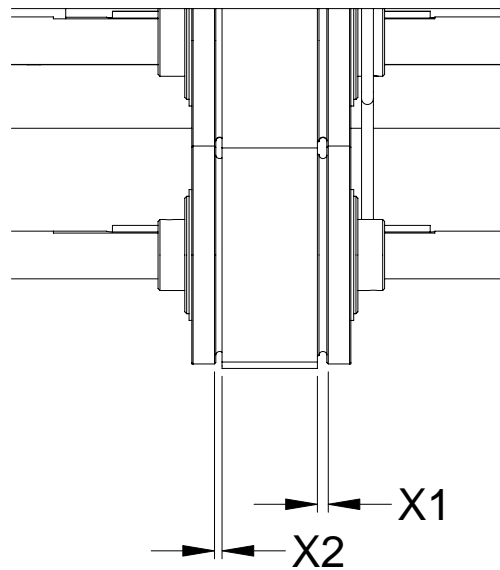
Figure 2-3: BK800L-3 Belt Tensioning Screws Location



2. Start the flipover unit
3. Use a 1/8” Allen T handle to tighten or loosen the four screws until both belts run centered with the rollers. See *Figure 2-4* below. For proper alignment X1 should equal X2. The four set screws will adjust the relative position of the two out feed

shafts thus modifying the belt tension and also the belt angle with respect to the rollers.

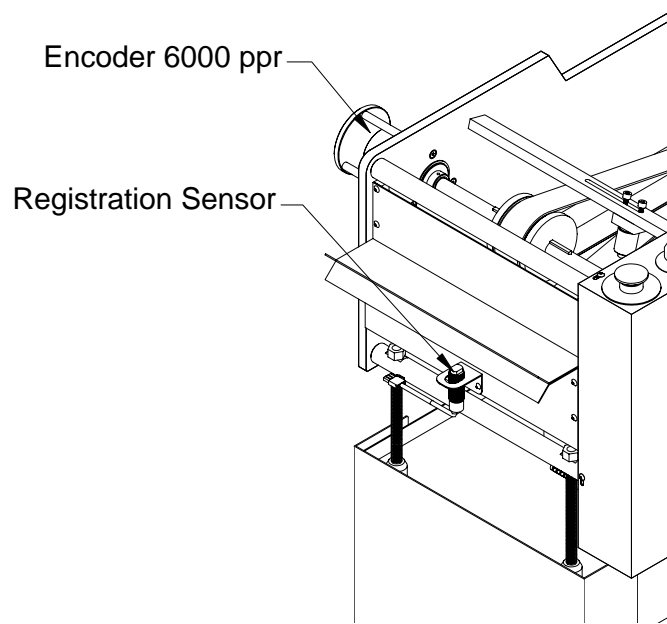
Figure 2-4: BK800L-3 Belt–Roller Relative Position



2.6 Product Tracking (Optional)

A flipover tracking kit, Buskro P/N BK800L-3-TRK, can be ordered separately if the unit is intended to be used in a system where product tracking is required. Two components are used for product tracking: the encoder, mounted on the left side of the unit directly on the drive shaft, and the registration photo eye, attached facing upwards on the lower product guide. The reflective tape needed for the sensor to operate properly is attached to the upper product guide, facing the sensor. See *Figure 2-5* below.

Figure 2-5: *Encoder and registration sensor used for product tracking*



2.7 Operating the Flipover

Operating the unit is extremely simple if the belts are properly aligned and tensioned and the height of the unit is properly adjusted to ensure the product flow is smooth and without jams. The unit can operate in two modes:

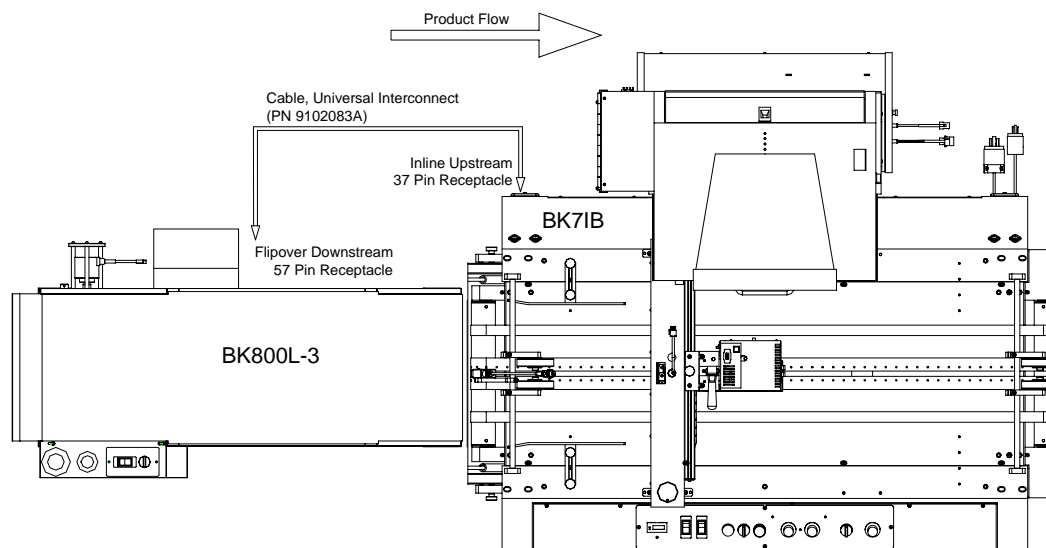
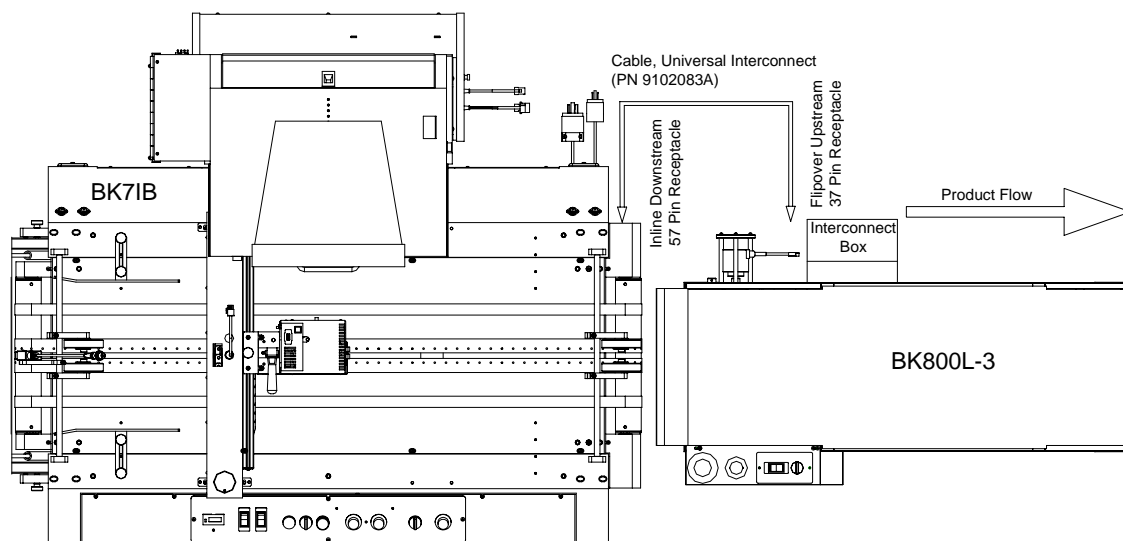
- Stand alone
- Inline

2.7.1 Standalone mode

When standalone operation is required, the unit is normally located downstream, just before the conveyor and it is not necessary to start-stop the upstream-downstream equipment with the unit. In this mode, the unit flipover will start running as soon as the start button is pressed.

2.7.2 Inline mode

When inline operation is required, the unit is normally located upstream an inkjet and must stop when the downstream unit stops to prevent product jams under the inkjet infeed rollers. In this mode, the flipover unit will run as long as the downstream runs and will stop when the downstream stops. For the unit to operate in inline mode, the universal interconnect cable provided must be properly connected, the Base Control Board DIP switches must be properly configured and the Upstream/Downstream enable switches on the upstream/downstream equipment must be properly set.

Figure 2-6: *Connecting the Flipover Unit Upstream a BK7IB Inkjet base*Figure 2-7: *Connecting the Flipover Unit Downstream a BK7IB Inkjet base*

3.1 Maintenance

3.1.1 Maintenance schedule

The maintenance schedule table below applies to equipment operated daily on an 8-hour basis. If the equipment is to be used more frequently, the maintenance schedule must be adjusted accordingly.

Table 3-1: *Maintenance Schedule Table*

Period	Maintenance Function
Daily	<p>Clean the registration sensor. The sensor surface must be clear of dust particles in order to function properly. A sensor that does not operate properly, can cause tracking errors and lost pieces.</p> <p>Examine the flipover belts for wear. Properly tension the belts before each job to make sure the belts do not rub against the roller shoulders which will significantly decrease their life. Replace if necessary.</p>
Annually	<p>Examine all mechanical drive components including belts, shafts, bearings, and rollers for wear. Replace if necessary.</p>

Note: Acquiring a small air compressor is recommended as compressed air is useful in removing debris.

Assembly Drawings

Appendix A

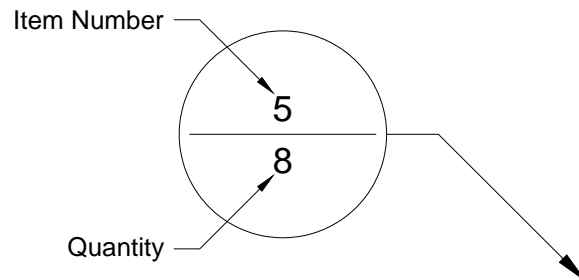
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Balloon Annotation and Parts Listing



Item	Part Number	Quantity	Description	Reference
1				
2				

The following is a description of how to interpret the information in this section:

Item:

This column indicates the item number used for each unique part in an assembly drawing. It is matched with the top number in the balloon pointing at the associated part.

Part Number:

This column represents the Buskro part number.

Quantity:

This represents the total number of a given part in an assembly. It is matched with the bottom number in the balloon pointing at the associated part.

Description:

This column contains a brief description of the part.

Reference:

This column indicates the page location for sub-assemblies.

Table A-1: *Flipover Structural Assembly (BK800-3-STR)*

Item	Part Number	Quantity	Description	Reference
1	106100	2	Belt Alignment Tube	
3	300100L	1	Left Flipover Frame	
4	300101L	1	Right Flipover Frame	
5	310100	2	Upper Spacer Bar	
6	310102	2	Lower Spacer Bar	
7	310103	2	Motor Support Bar	
8	310105	1	Belt Alignment Bar	
9	330105	1	Material Guide Block	
10	330106	1	Material Guide Clamp	
12	343101A	4	Flipover Foot	
13	343105L	1	Material Guide Rod (BK 800L)	
14	343151	4	Nut, 1/2-13 UNC	
15	404830	2	Screw, SHSS, 10-32 UNF x 1/2"	
16	405250	14	Screw, SHCS, 1/4-20 UNC x 3/4"	
17	405270	3	Screw, BHCS, 1/4-20 UNC x 1"	
18	407250	8	Screw, SHCS, 3/8-16 UNC x 3/4"	
19	416180	2	Shoulder Bolt, 1/4-20 UNC x 3/4"	
20	439010	2	Lockwasher, 1/4" I.D.	
21	440010	1	Washer, 1/4" I.D.	
22	440020	7	Washer, 3/8" ID	
23	500020	4	Bearing R6ZZ, 3/8" I.D.	

Figure A-1: *BK800L-3 - Flipover Structural Assembly (BK800-STR)*

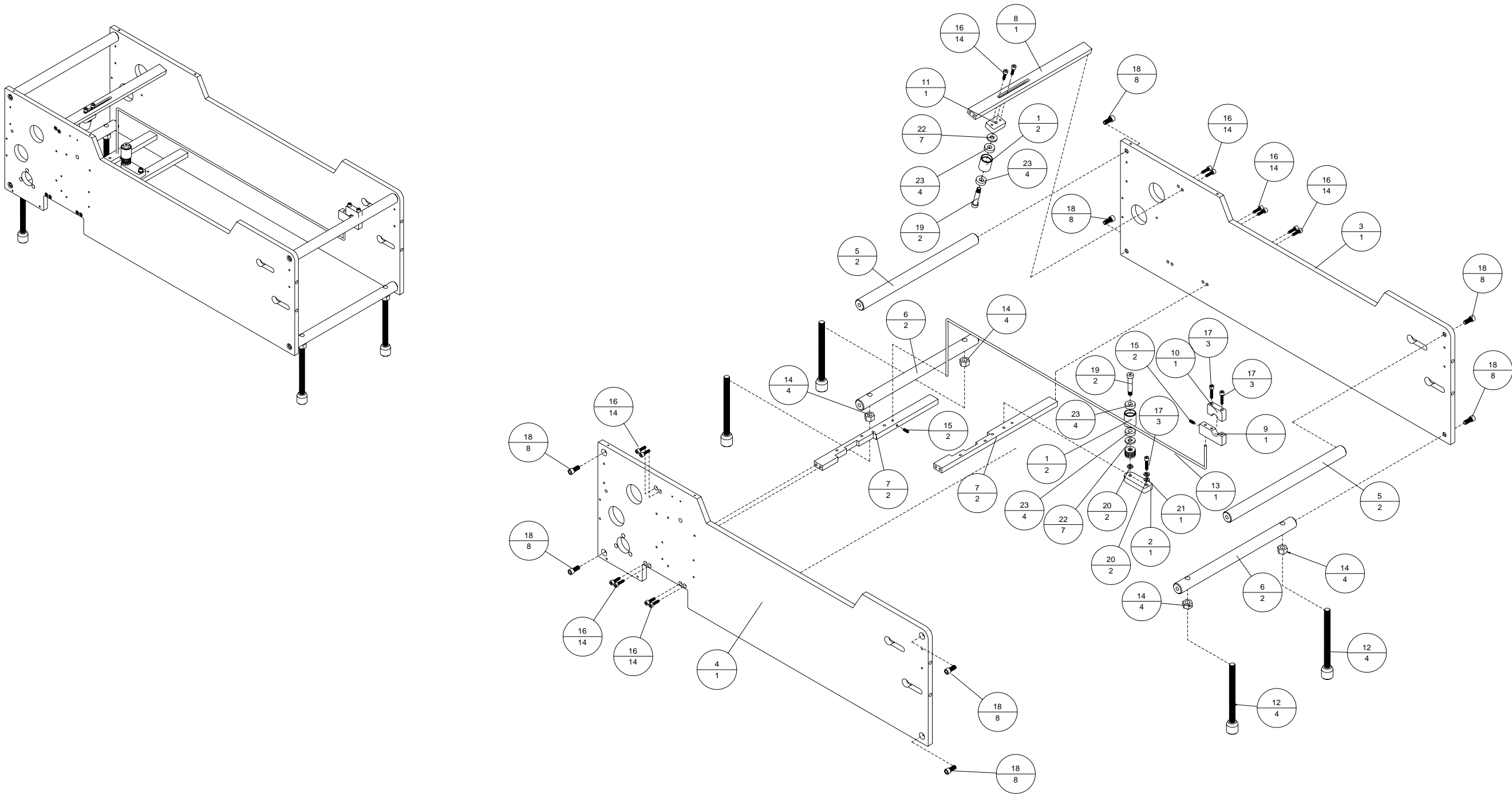


Table A-2: *Flipover Drive Assembly (BK800-3-DRV)*

Item	Part Number	Quantity	Description	Reference
1	100102	2	Belt Drive Shaft	
2	100104	2	Takeup shaft	
3	116100	1	Sheave, AK20 x 5/8"	
4	116101	1	Sheave, AK41 x 1/2"	
5	116104	2	Belt Drive Pulley	
6	116106	2	Belt Takeup Pulley	
7	116533	1	Pulley 12LF050 x R6	
8	116606	2	Pulley 20LB050 x 3/4"	
9	120101L	1	DRIVE BELT, 4L-220	
10	120103L	2	FlipoverBelt (BK800L-3)	
11	300100L	2	Left Flipover Frame (BK800L-3-STR)	
12	300101L	1	Right Flipover Frame (BK800L-3-STR)	
13	310103	2	Motor Support Bar (BK800L-3-STR)	
14	330101	1	Upper Roller Driveshaft Housing	
15	404810	2	Screw, SHSS, 10-32 UNF x 1/4"	
16	405250	11	Screw, SHCS, 1/4-20 UNC x 3/4"	
17	405650	4	Screw, HHMS, 1/4-20 UNC 3/4"	
18	405850	2	Screw, SHSS, 1/4-20 UNC x 3/4"	
19	405885	4	Screw, SHSS, 1/4-20 UNC x 2"	
20	406810	2	Screw, SHSS, 5/16-18 UNC x 1/4"	
21	416175	1	Shoulder Bolt, 3/8" x 1 1/4" (5/16-18)	
22	433000	2	Keystock, 3/16 x 3/16 x 5"	
23	433000_1	2	Keystock, 3/16 x 3/16 x 1"	
24	437050	1	Retaining Ring, 1/2" I.D., External	
25	439010	4	Lockwasher, 1/4" I.D.	
26	440010	4	Washer 1/4 I.D.	
27	443830	1	Spacer Washer, 3/8" I.D. x 0.031 THK	
28	445030	3	Spacer Washer, 1/2" I.D. x 0.031 THK	
29	447530	6	Spacer, 3/4" I.D. x 0.030"	
30	500020	2	Bearing, R6, 3/8" I.D.	
31	500030	2	Bearing, R8, 1/2" I.D.	
32	500055	8	Bearing, UBR-204-12S, 3/4" ID	
33	800530	1	DC Motor 90 V, 1/3 HP	
34	9102945	1	Pulley 12LF050 x 1/2" I.D.	
35	9102968	1	Drive Belt D225L050	
36	9102970	1	Drive Shaft, 1/2" O.D. x 6" long	

Figure A-2: *BK800L-3 - Flipover Drive Assembly (BK800-DRV)*

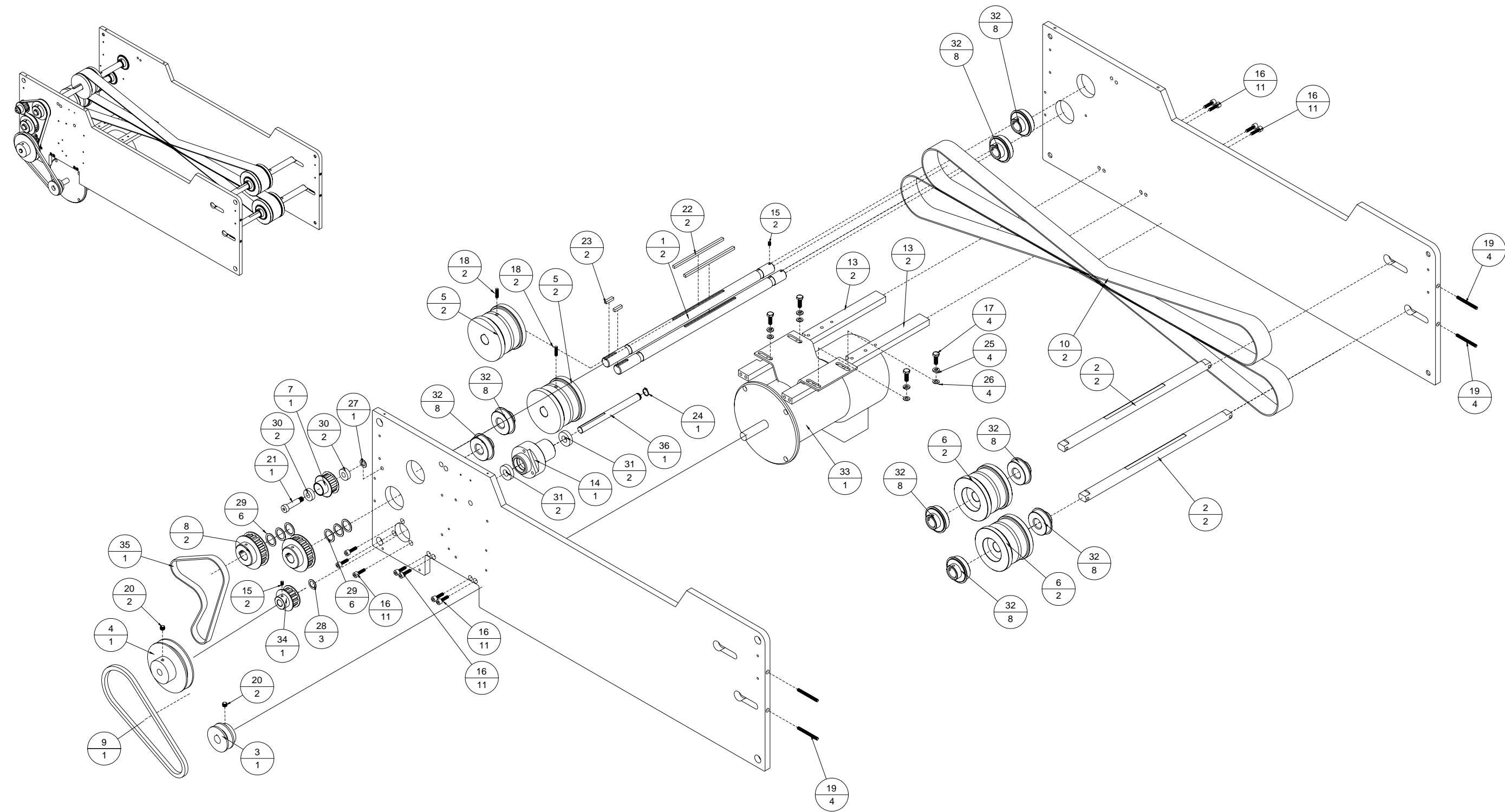


Table A-3: *BK800L-3 - Flipover Electrical Assembly (BK800-ELE)*

Item	Part Number	Quantity	Description	Reference
1	300100L	1	Right Flipover Frame (BK800L-3-STR)	
2	300101L	1	Left Flipover Frame (BK800L-3-STR)	
3	310103	1	Motor Support Bar (BK800L-3-STR)	
4	402370	2	Screw, PHMS, 6-32 UNC x 1"	
5	403510	4	Screw, BHCS, 8-32 UNC x 1/4"	
6	404510	2	Screw, BHCS, 10-32 UNF x 1/4"	
7	404520	2	Screw, BHCS, 10-32 UNF x 3/8"	
8	404570	2	Screw, BHCS, 10-32 UNF x 1"	
9	420008	2	Nut, 10-32 UNF	
10	439008	2	Lockwasher, No. 10, External Tooth	
11	439009	2	Lockwasher, No. 10	
12	600005	1	DC Controller, 90 VDC	
13	603020	1	Microswitch	
14	603021	1	Microswitch Cover	
15	606013	12"	Cable, #22-3, Unshielded	
16	606014	16"	Cable, #22-4, Unshielded	
17	606017	12"	Cable, #22-8, Unshielded	
18	606030	2 x 16"	Cable, #18-3, Unshielded	
19	606034	24"	Cable, #16-3, SJOW-A	
20	606530	16"	Cable, #18-9, Unshielded	
21	609101	2	Marett, Orange, 14-22	
22	609114	2	Terminal, Ring, #10, 12-10AWG, Non-Insulated	
23	609120	1	Terminal, Ring, 1/4", 16-14 AWG, Non-Insulated	
24	614001	1	Plug, Cap Pin Housing	
25	614002	3	Female Contact, Socket	
26	614006	4	Contact, Female, 24-18 AWG, Mate-n-lok	
27	614007	1	Connector, 4-Pin, Socket Housing, Mate-n-lok	
28	614108	3	Contact, Female, 24-20 AWG, Yellow	
29	614115	1	Plug, Female, 11-4	
30	615110A	1	Connector Plate Assembly	Page A-14
31	615140	10	Lashing Tie, Small	
32	615141	4	Lashing, Tie, Large	
33	706110L	1	Gear Barrier Plate (BK800L-3-SFT)	
34	76597-650	1	Preh Cord Plug Male, 5-Pin, 180 Degrees	
35	9100200	1	Connector, Female, 4-Pin, Mini-Fit Jrd.	
36	9100203	3	Contact, Female, 18-22 AWG, Series 5556	
37	9102122	1	Cable Clamp, Shell 11, CPC	
38	9102964A	1	Terminal Block Assembly, BK800L-3	Page A-10
39	9102957A	1	Cover Assembly, BK800L-3 Right	Page A-12
40	9103011A	1	Flipover Left Cover Assembly	Page A-16

Figure A-3: *BK800L-3 - Flipover Electrical Assembly (BK800-3-ELE)*

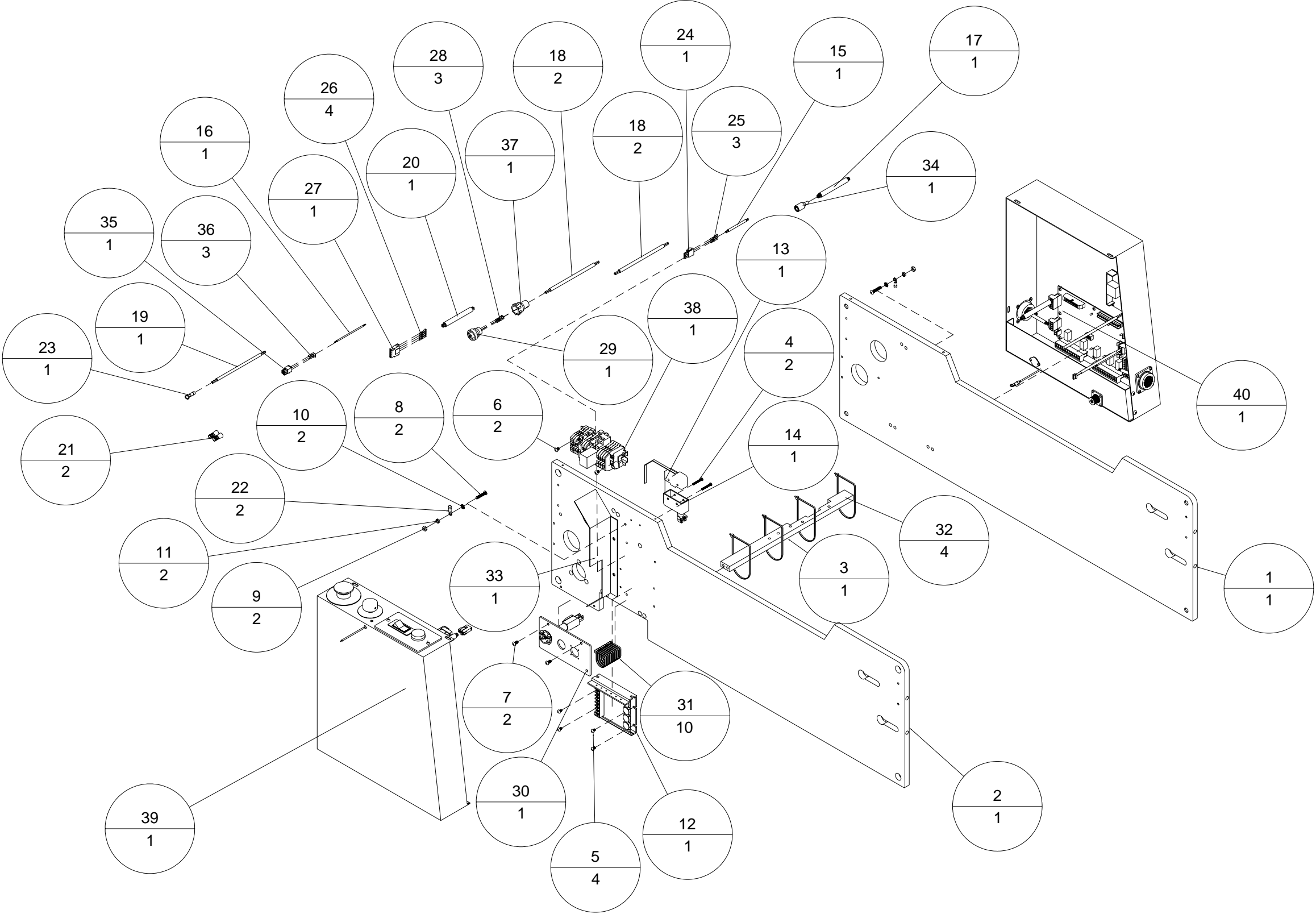


Table A-4: *BK800L-3 - Flipover Safety Covers and Guides (BK800-SFT)*

Item	Part Number	Quantity	Description	Reference
1	300100L	1	Left Flipover Frame (BK800L-3-STR)	
2	300101L	1	Right Flipover Frame (BK800L-3-STR)	
3	330110	4	Material Guide Block	
4	404250	8	Screw, SHCS, 10-32 UNF x 3/4"	
5	404510	16	Screw, BHCS, 10-32 UNF x 1/4"	
6	700100L	1	Safety Cover (BK 800L)	
7	700102L	1	Flipover Right Cover (BK800L-3-ELE - 9102957A)	
8	706110L	1	Gear Barrier Plate	
9	707110	1	Lower Material Guide	
10	707111	1	Upper Material Guide	
11	9103011	1	Flipover Left Cover	

Figure A-4: *BK800L-3 - Flipover Safety Covers and Guides (BK800-SFT)*

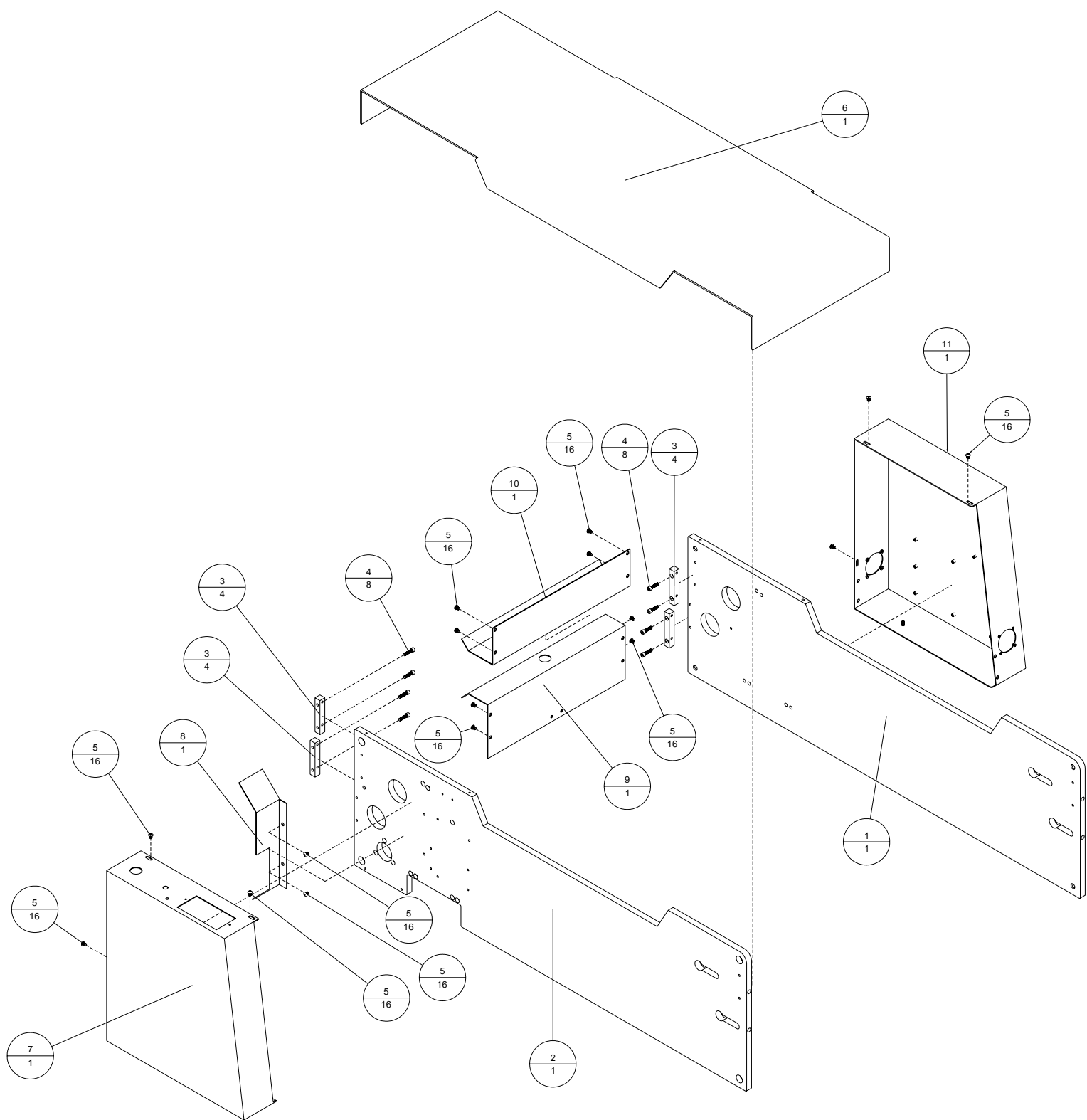


Table A-5: *BK800L-3 - Flipover Stand Assembly (9103006A)*

Item	Part Number	Quantity	Description	Reference
1	343016	4	Jam Nut, 3/4-10 UNC	
2	711110L	1	BK800L Flipover Stand	
3	9102320A	4	Leveling Leg Assembly, 3/4-10 UNC	

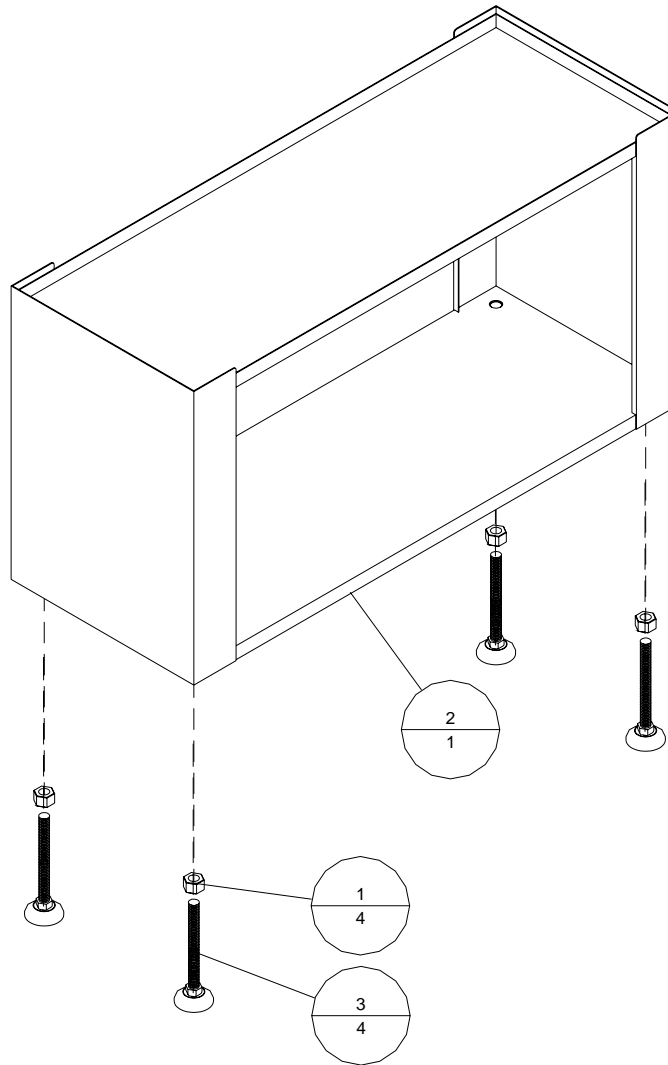
Figure A-5: *BK800L-3 - Flipover Stand Assembly (9103006A)*

Table A-6: *BK800L-3 - Flipover Terminal Block Assembly (9102964A)*

Item	Part Number	Quantity	Description	Reference
1	610102	1	Relay, 12 VDC	
2	615001	1	Fuse Holder, M4/8, SF2, Grey, 8 mm, 6.3 A	
3	615002	7	Terminal block, M4/6, Grey, 6 mm	
4	615003	1	Terminal block, M10/10, Grey, 10 mm, 7.5A	
5	615004	1	Relay Base	
6	615012	2	End Section, FEM6, Grey, 2.5 mm	
7	615016	1	End Stop, BAM, 9.1 mm	
8	615017	2	Terminal, EK2.5/35, Ground	
9	615021	1	T Rail, DIN, 5" Long	
10	646000	1	Fuse, 3A, 250V, 5 x 20 mm, Slo-Blo	

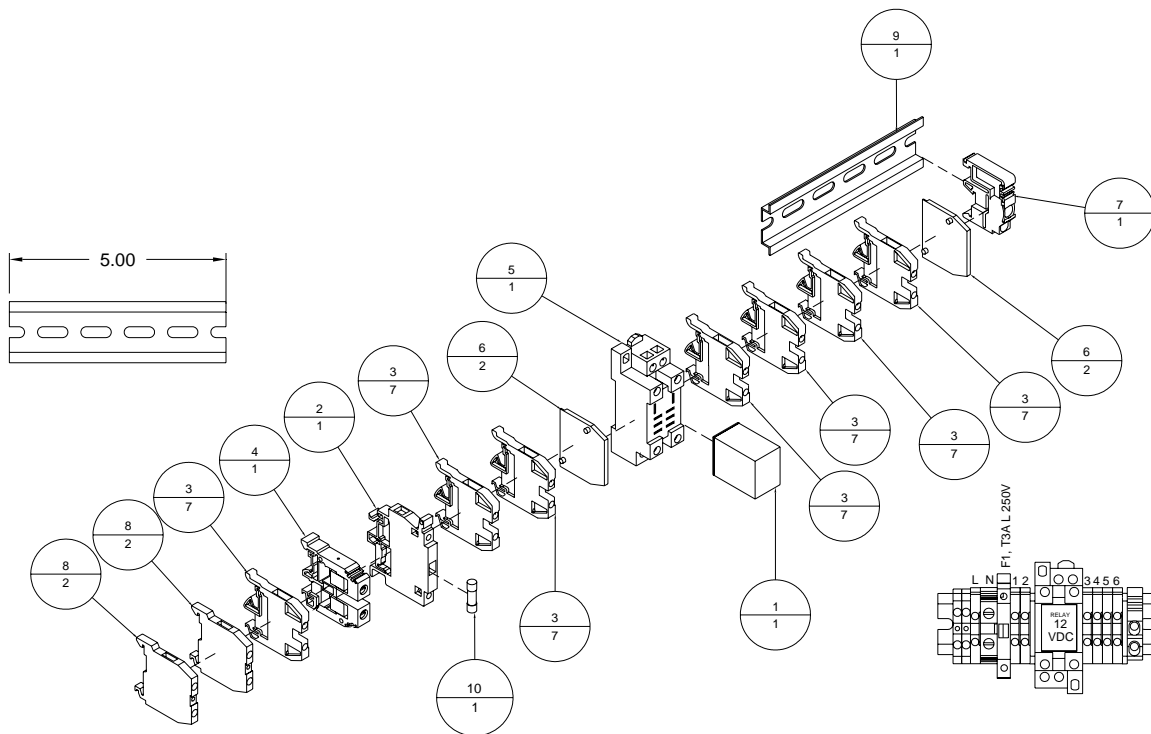
Figure A-6: *BK800L-3 - Flipover Terminal Block Assembly (9102964A)*

Table A-7: *BK800L-3 - Flipover Right Cover Assembly (9102957A)*

Item	Part Number	Quantity	Description	Reference
1	39-01-2041	1	.165" Pitch Mini-Fit, Jr. Plug, Dual Row	
2	402510	2	Screw, BHCS, 6-32 UNC x 1/4"	
3	420008	1	Nut, 10-32 UNF	
4	439008	1	Lockwasher, No.10, External Tooth	
5	600011	1	Potentiometer, W/Dart 600005	
6	603125	1	Switch Locking Collar	
7	603127	1	Block, N.C. Contact, Red	
8	605116A	1	Instrument Panel Assembly, BK800L-DC	
9	606013	15"	Cable, #22-3, Unshielded	
10	606014	14"	Cable, #22-4, Unshielded	
11	606359	12"	Wire, #16, Green/Yellow Hookup	
12	606530	10"	Cable, #18-9, Unshielded	
13	609110	3	Connector, Push-on, Blue	
14	609111	2	Terminal, Ring, #10, 16-14 AWG, Blue	
15	614000	3	Contact, Male, 22-18 AWG, Mini Mate-n-lok	
16	614003	1	Cap Receptacle	
17	614008	4	Contact, Male, 24-18 AWG, Mate-n-lok	
18	614009	1	Connector, 4-Pin, male, Mate-n-lok	
19	615140	6	Lashing Tie, Small	
20	700102L	1	Cover Flip Over	
21	9100207	3	Contact, Male, 18-22 AWG, Series 5558	
22	9101518	1	Switch, Emergency Stop	
23	9101803	1	Marking, Emergency Stop, Round	

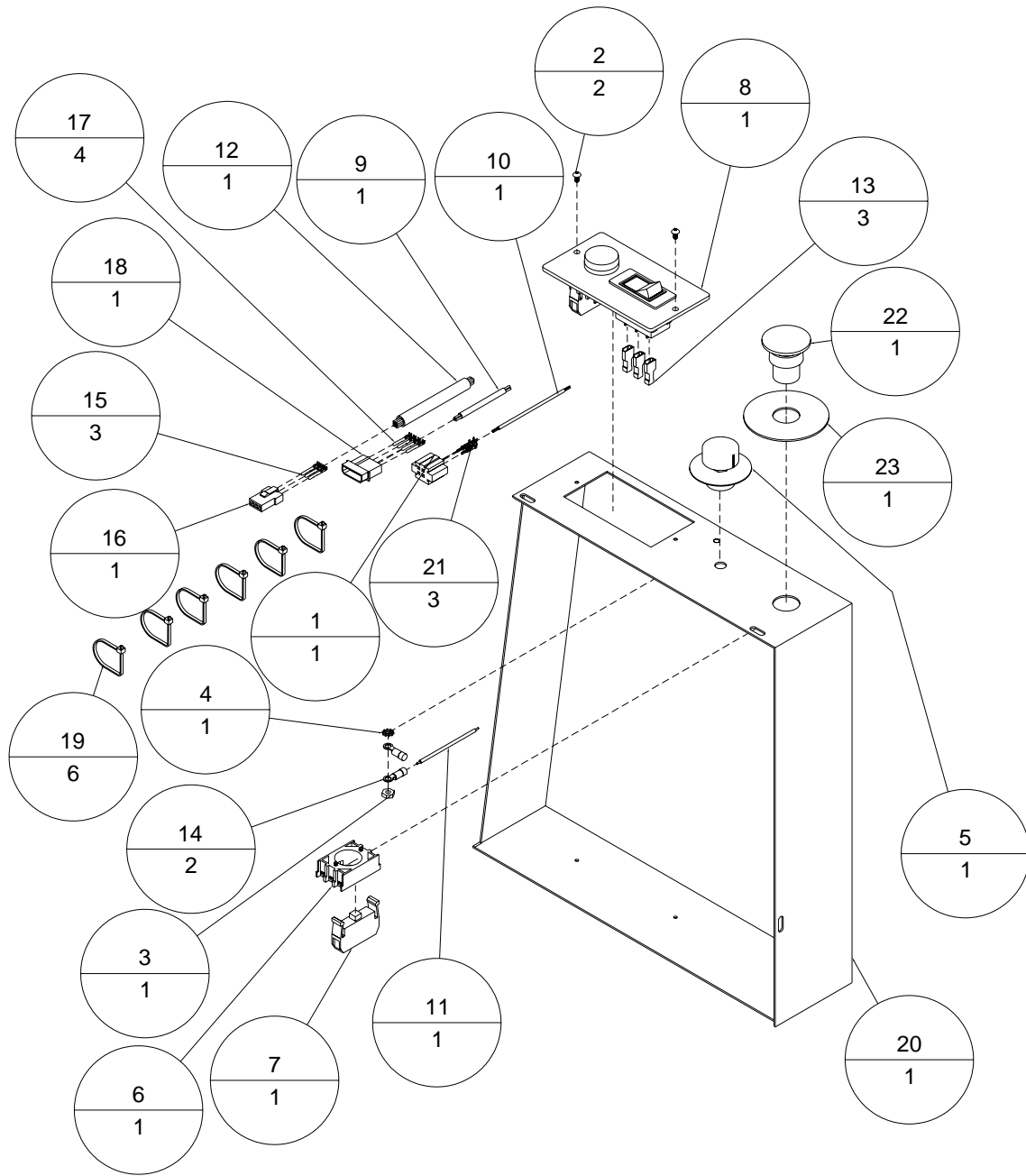
Figure A-7: *BK800L-3 - Flipover Right Cover Assembly (9102957A)*

Table A-8: *BK800L-3 - Flipover Instrument Panel Assembly (605116A)*

Item	Part Number	Quantity	Description	Reference
1	603120	1	Switch, Green, Pushbutton	
2	603125	1	Switch Locking Collar	
3	603126	1	Block, N.O. Contact, Green	
4	603300	1	Switch, Breaker, 5A, 1 Pole, Illuminated Red	
5	615116	1	Instrument Panel BK800	

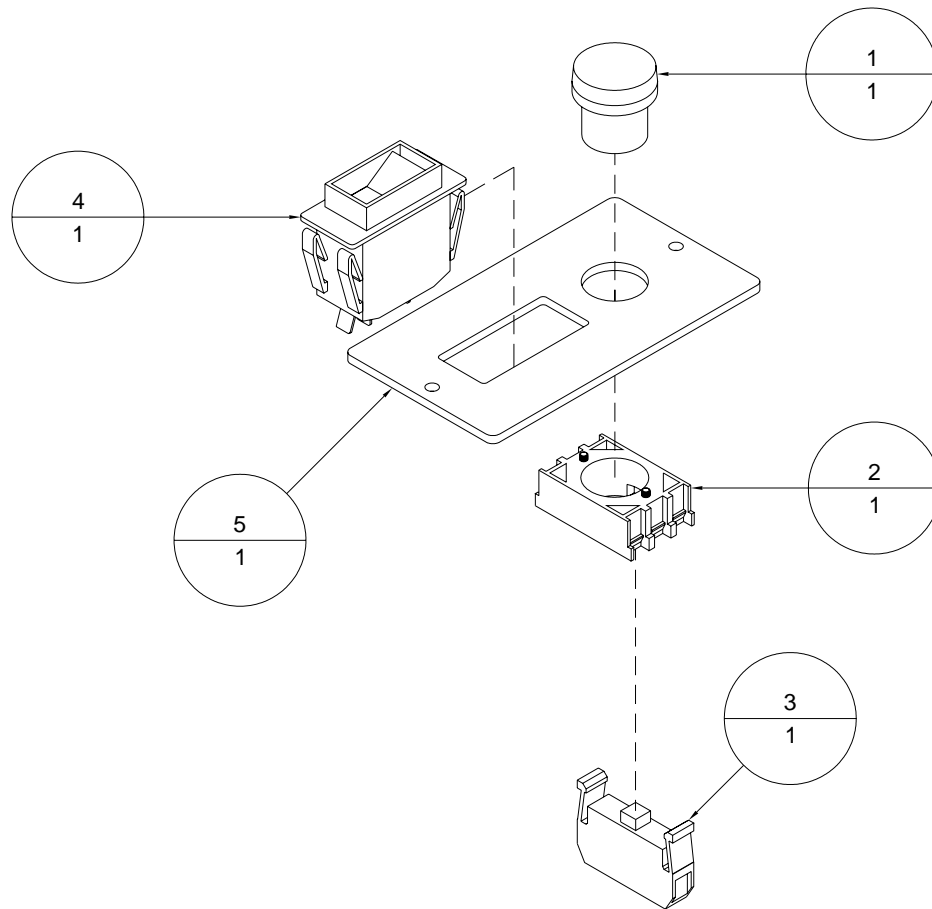
Figure A-8: *BK800L-3 - Flipover Instrument Panel Assembly (605116A)*

Table A-9: *BK800L-3 - Flipover Connector Plate Assembly (615110A)*

Item	Part Number	Quantity	Description	Reference
1	606330	1	Replacement Cord, #16-3 x 15ft.	
2	615110	1	Connector Plate	
3	615131	1	Cable Clamp, 3/8", Metal	

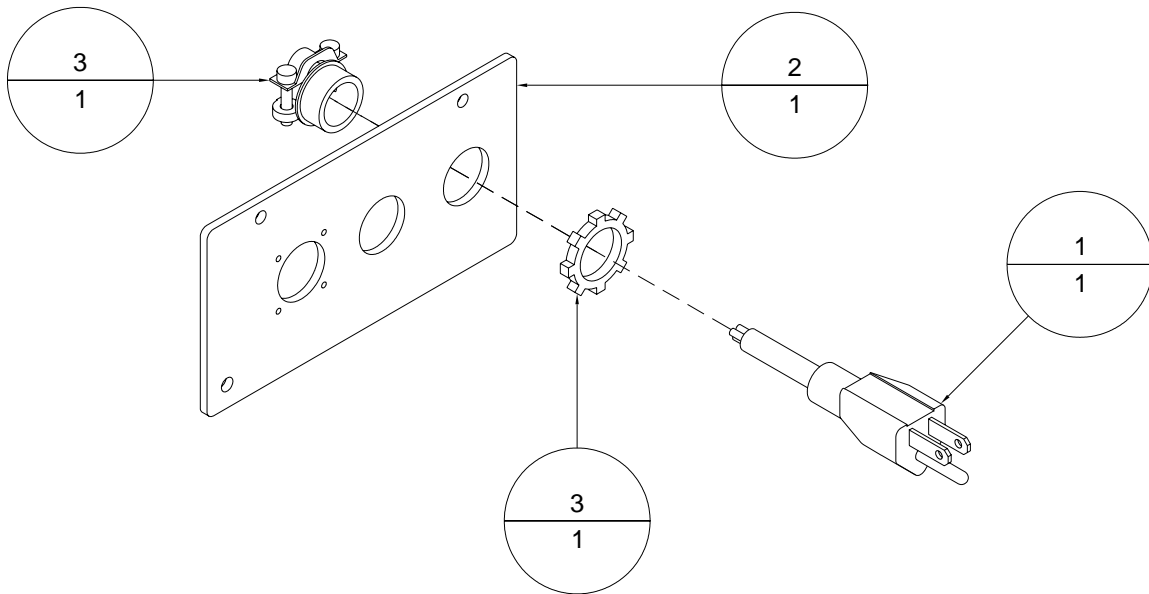
Figure A-9: *BK800L-3 - Flipover Connector Plate Assembly (615110A)*

Table A-10: *BK800L-3 - Flipover Left Cover Assembly(9103011A)*

Item	Part Number	Quantity	Description	Reference
1	401310	4	Screw, PHMS, 4-40 UNC x 1/4"	
2	401510	6	Screw, BHCS, 4-40 UNC x 1/4"	
3	402310	16	Screw, PHMS, 6-32 UNC x 1/4"	
4	404510	4	Screw, BHCS, 10-32 UNF x 1/4"	
5	420004	6	Nut, 4-40 UNC	
6	420008	1	Nut, 10-32 UNF	
7	439008	1	Lockwasher, No. 10, External Tooth	
8	439009	1	Lockwasher, No. 10	
9	606015	2	Cable, #22-16 Unshielded, 8"	
10	606530	1	Cable, #18-9 Unshielded, 12"	
11	609111	4	Terminal, Ring, #10, 16-14 AWG, Blue	
12	614108	14	Contact, Female, 24-20 AWG, Yellow	
13	614119	1	Receptacle, 11-4 Female	
14	614135	1	Receptacle, Female, 23-37	
15	615065	1	Connector, Female, 5-Pin, BLA5	
16	615066	1	Connector, Female, 4-Pin, BLA4	
17	71200-050	1	Preh Panel Mount Female Receptacle 5-Pin	
18	9100197	2	Connector Female, 14-Pin, BLA 14	
19	9100785	14	Contact, Female, 24-20 AWG, Size 20 DF	
20	9101647	1	Keying Plug, Series 1	
21	9102054	1	Receptacle, Female, 23-57	
22	9102380	1	Board, Base Control	
23	9102417	1	Power Supply, Switching, 12VDC/1.7A	
24	9102422A	1	Cable, Output, 12VDC Power Supply	
25	9102564	1	Connector, Female, 4-Pin, 5264	
26	9102565	2	Contact, Female, #22-28, SPOX	
27	9102772	2	Keying Plug, Universal Polarizing Pin	
28	9103011	1	Flipover Left Cover	
29	9103510	1	Cover, Flipover	

Figure A-10: *BK800L-3 – Flipover Left Cover Assembly (9103011A)*

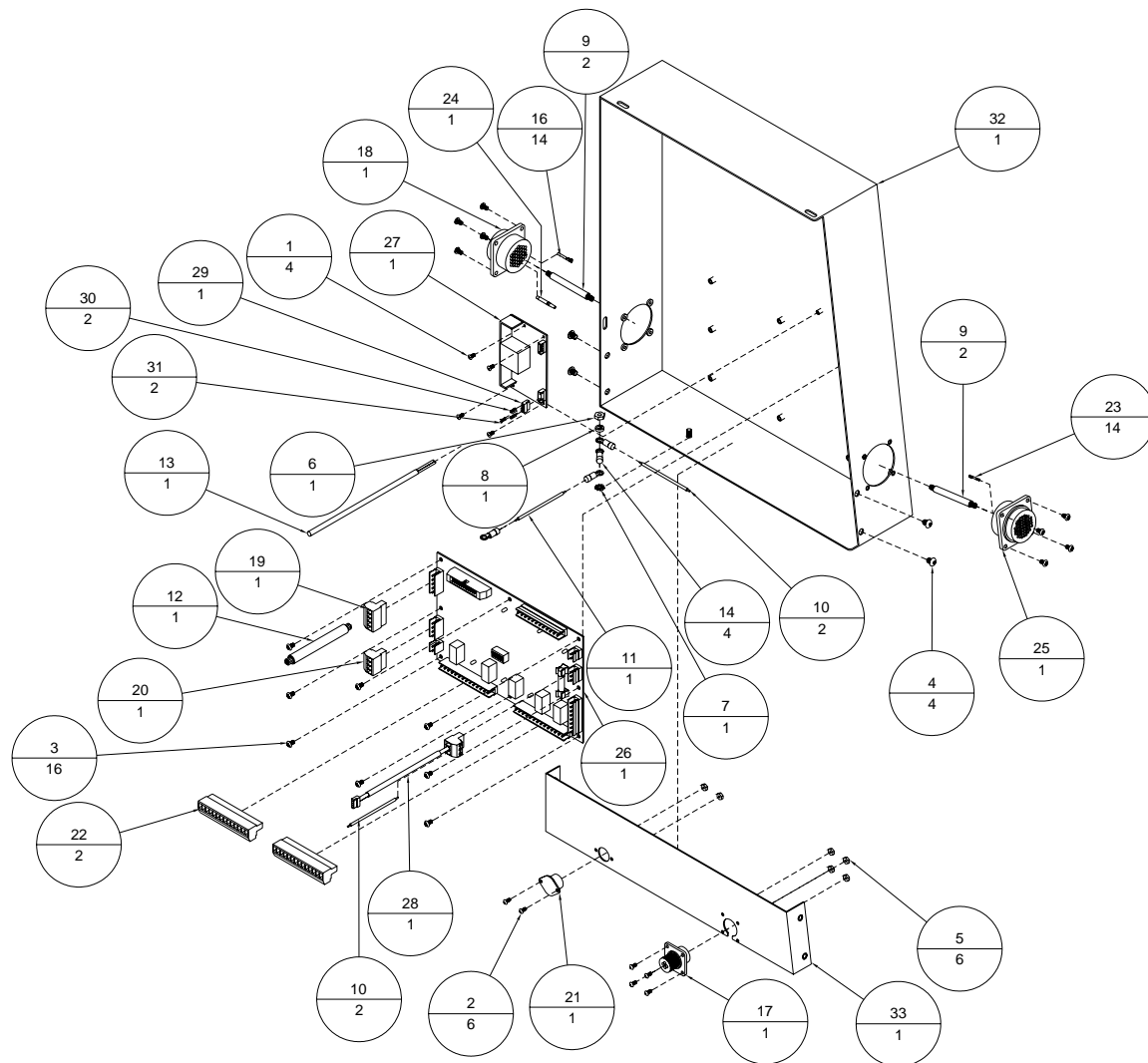
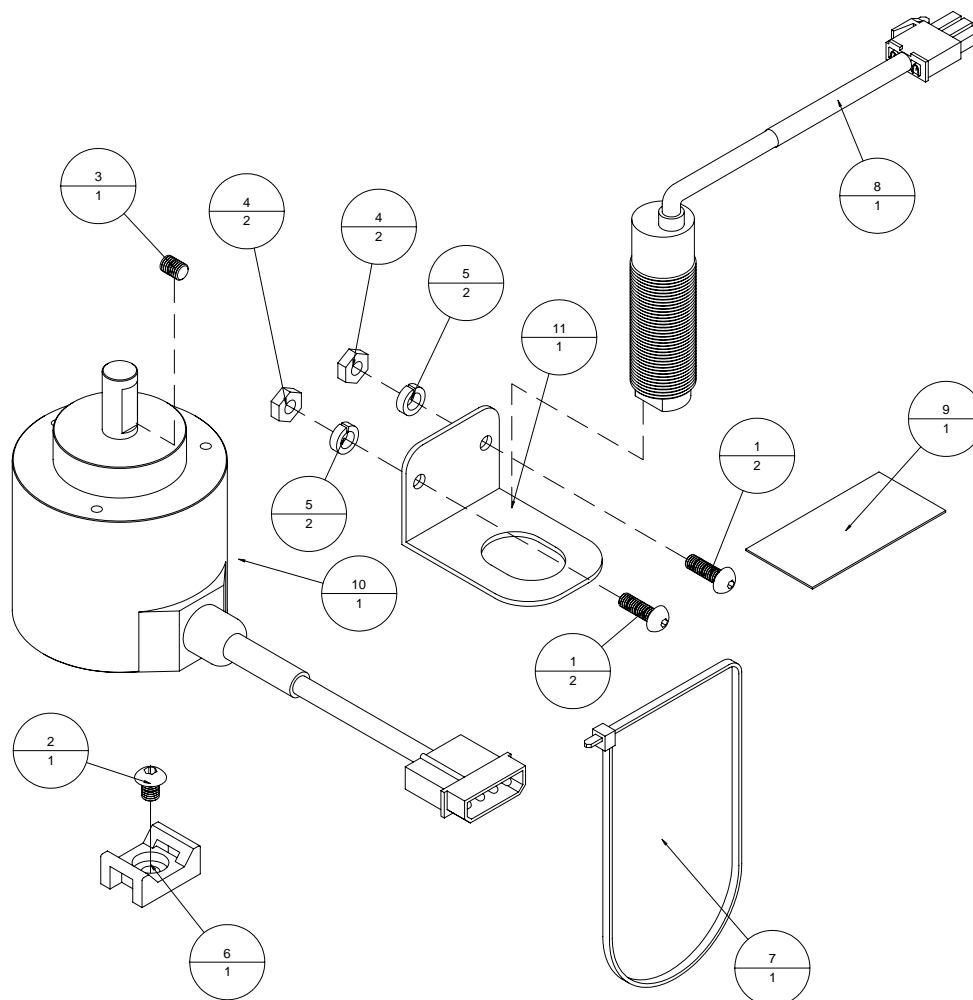


Table A-11: *BK800L-3 - Flipover Tracking Kit (BK800L-TRK)*

Item	Part Number	Quantity	Description	Reference
1	403530	2	Screw, BHCS 8-32 UNC x 1/2"	
2	404510	1	Screw, BHCS, 10-32 UNF x 1/4"	
3	404810	1	Screw, SHSS, 10-32 UNF x 1/4"	
4	420007	2	Nut, 8-32 UNC	
5	439009	2	Lockwasher, No. 10	
6	615102	1	Tie Mount	
7	615141	1	Lashing Tie, Large	
8	630002A	1	Photocue Sensor Assembly	
9	630006	1	Reflective Tape, 2" Long	
10	9100188A	1	Encoder Assembly, 6000 ppr.	
11	9101720	1	Bracket, Photo Sensor	

Figure A-11: *BK800L-3 – Flipover Tracking Kit (BK800L-TRK)*

List of Schematics

Figure B-1: BK800L-3-ELE, Terminal Block Assembly (9102946A-ELE) B-1

Figure B-2: BK800L-3-ELE Left Cover Assembly, (9103011A-ELE) B-2

Figure B-3: BK800L-3-ELE, Right Cover Assembly (9102946A)..... B-3

Figure B-4: Flipover Electrical Schematic (BK800L-3) B-4

Figure B-1: *BK800L-3-ELE, Terminal Block Assembly (9102946A-ELE)*

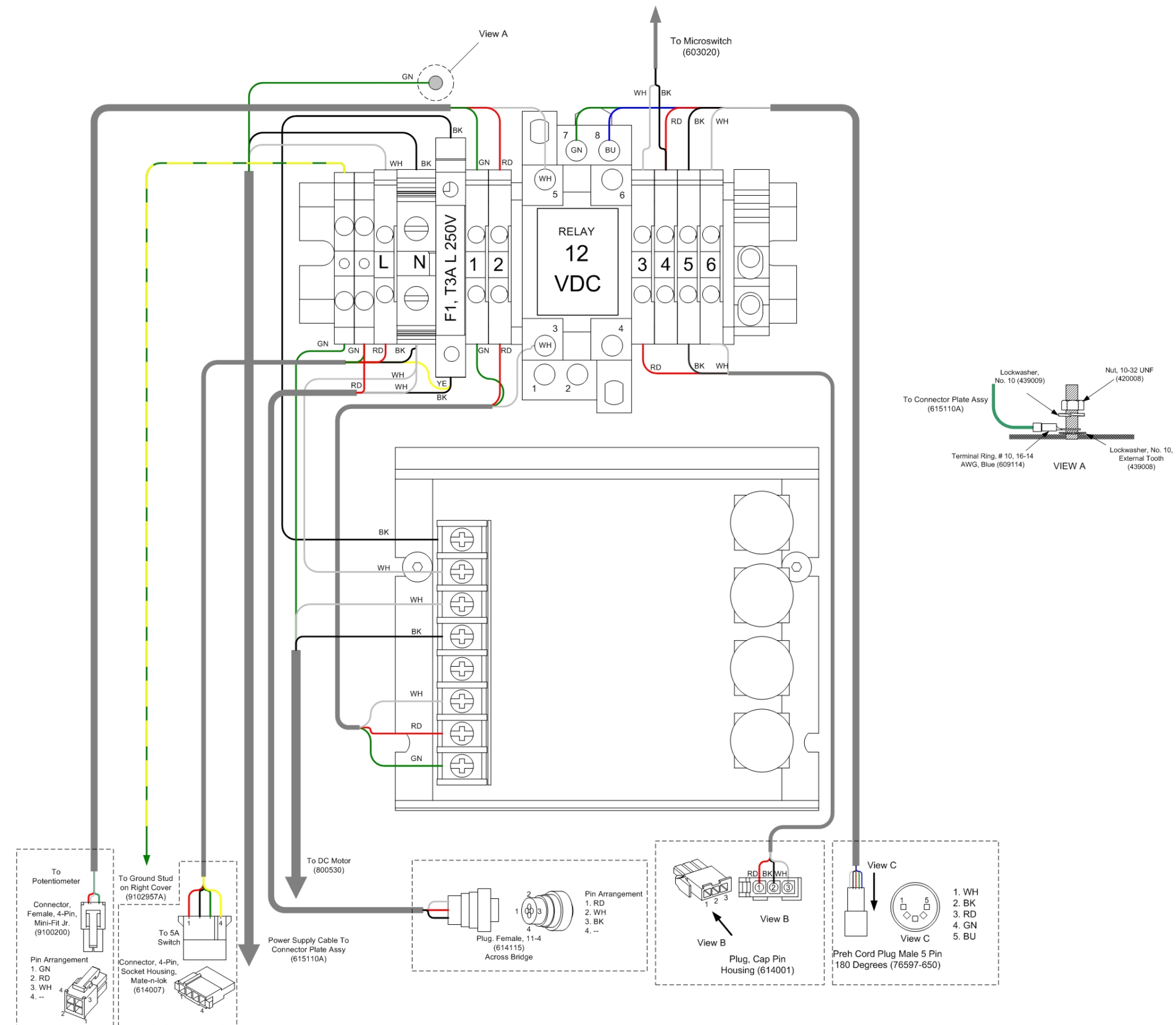


Figure B-2: *BK800L-3-ELE Left Cover Assembly, (9103011A-ELE)*

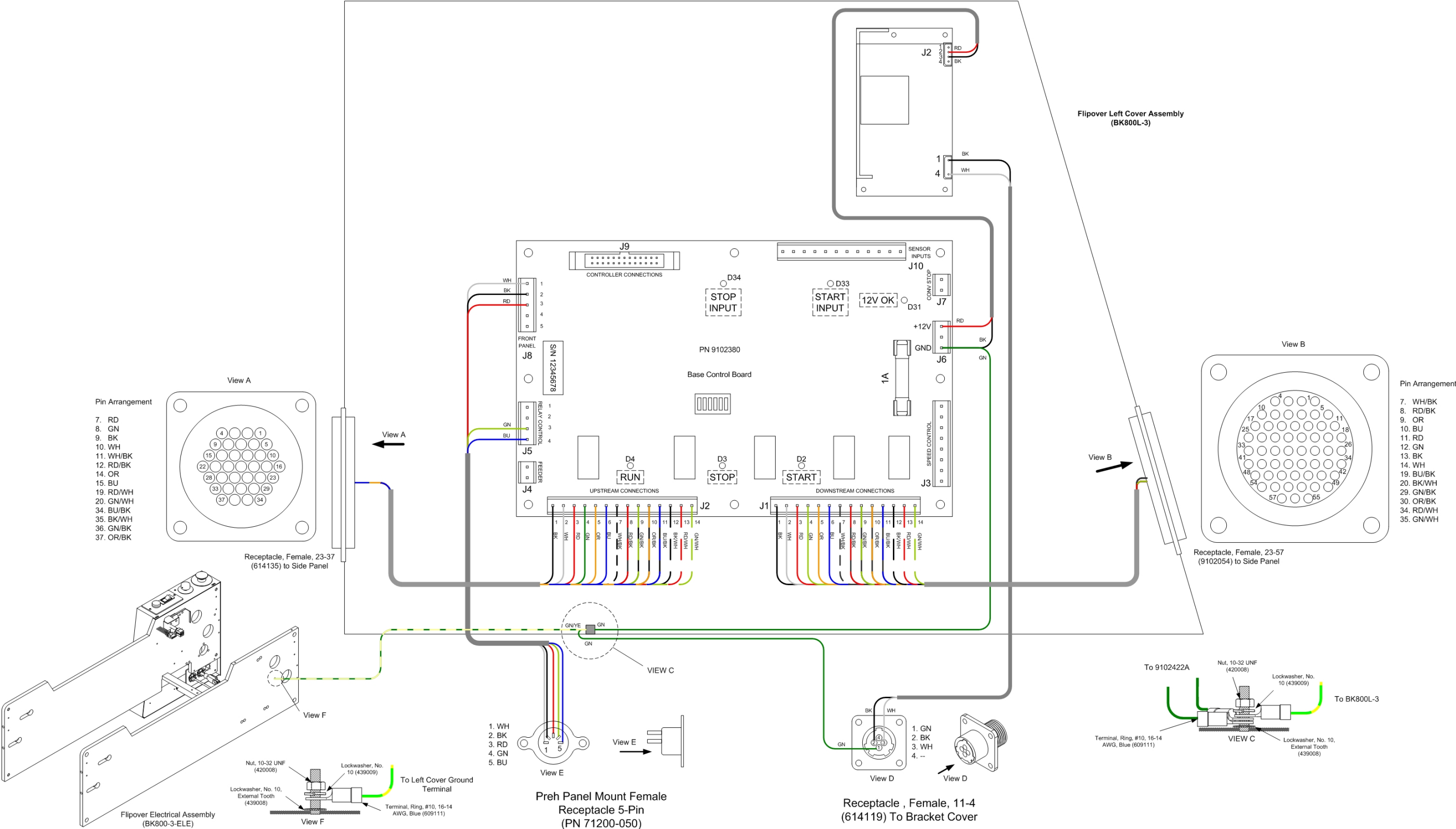


Figure B-3: *BK800L-3-ELE, Right Cover Assembly (9102946A)*

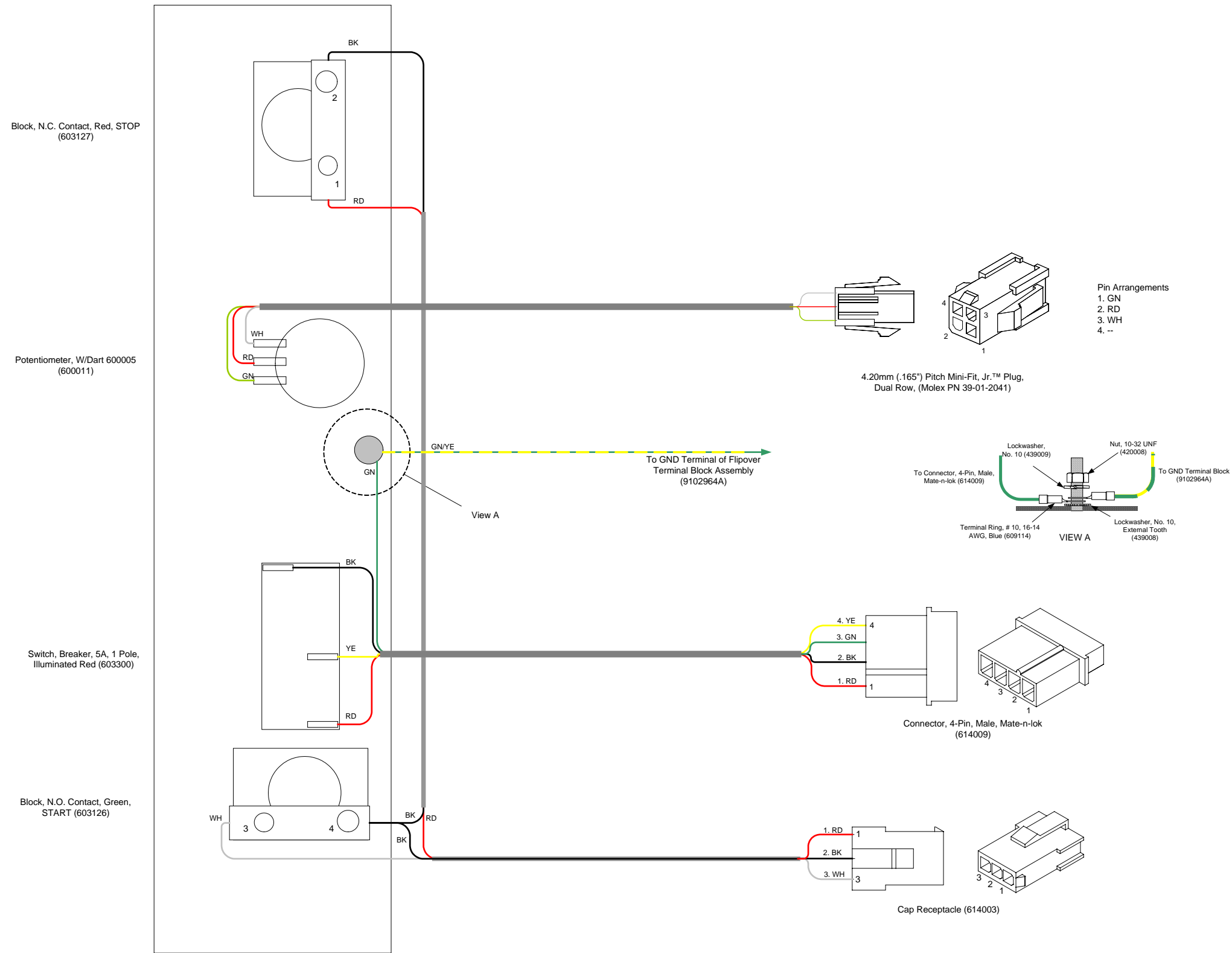


Figure B-4: *Flipover Electrical Schematic (BK800L-3)*

